REMARKS

Applicants respectfully request examination and consideration of the claims in view of the above amendments. Claims 11-19, 24, 26-28 and 30 were pending. Within the Office Action, Claims 11-19, 24, 26-28 and 30 have been rejected. Claims 25 and 29 were previously canceled. By the above amendments, Claims 11, 18, 24, 28 and 30 have been amended. Accordingly, Claims 11-19, 24, 26-28 and 30 are currently pending in this application.

Claim Objections

Within the Office Action, Claims 11, 18, 24, 28 and 30 have been objected to under 37 CFR 1.75 due to informalities. Specifically, it is asserted that the phrase "the hop-by-hop extension header a source home address" should be amended to recite "the hop-by-hop extension header including a source home address." However, the context of the above phrase is "detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a mobile correspondent node communicating the internet packets." As a result, it is clear that the hop-by-hop extension header does not comprise a source home address, but instead comprises an information field that may be filled with information representing a source home address of a mobile correspondent node that is communicating the internet packets. Further, this reading of source home address data from the information field is implied from the phrase "detecting from the information field" and thus does not need to be further recited in the claims. Accordingly, the objection should be withdrawn.

Rejections under § 112

Within the Office Action, Claims 11-19, 24, 26-28 and 30 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Specifically, it is asserted that "the home address" is indefinite because one cannot determine to which home address is being referred. Further it is asserted that "detecting ... a source home address, using the home address ... for communicating the internet packets to a correspondent node attached to the packet radio network, and allowing ingress of the internet packet" is not clear in how it allows the ingress of the internet packets upon detecting the source home address of the correspondent node rather than the destination address because the packet is transmitted to a packet radio network from an external packet data communication network.

By the above amendments, "the home address" has been amended to recite "the source home address of the mobile correspondent node." Thus, it is now clear that the "home address" refers to the source home address of the mobile correspondent node. Further, with regard to the GGSN allowing the ingress of packets by checking the source home address (as opposed to the destination address), the recited detecting of the source home address is correct. Specifically, as stated in the Specification, the TFT controller 500 which operates in the GGSN mobile IP layer is provided with a list of source [home] addresses 502 which are used to control the communication of IP data packets in accordance with a source address included within the Internet packet header. [Present Specification, page 11, lines 5-8] In operation, the TFT controller 500 checks the source address of the Internet packet against the list 502 and routes the internet packet via the appropriate data bearer which has been set up within the TFT controller. [Present Specification, page 12, lines 6-8] However, if the mobile node has moved to a foreign network, its new source address will not be recognized by the TFT and the packet will be dropped. As a result, the TFT must also look at the source home address in the hop-by-hop extension header so as to not drop a packet that has a care of address in the source header but a valid home address in the hop-by-hop extension header. [Present Specification, page 12, line 26 to page 13, line 6] Thus, it is clear that the ingress of internet packets to the packet data bearers is controlled/allowed by the GGSN via the TFT checking the source home address in the hop-by-hop extension header (which is recognizable) to ensure that a packet sent by a mobile node that has moved to a foreign network (and therefore has an unrecognized care of address in the source header) is not dropped. Accordingly, the rejections should be withdrawn.

Also within the Office Action, it is stated that Claims 1-17, 26, 27 and 30 have been rejected under 35 U.S.C. 112, second paragraph, as failing to define the invention. Specifically, it is asserted that the Claims are narrative in form and replete with indefinite and functional or operational language. By the above amendments, the Claims have been amended to clearly specify the structure in an organized way so as to present a complete operative device. Accordingly, the rejection should be withdrawn.

Rejections under § 103

Within the Office Action, Claims 11-19, 24, 26-28 and 30 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,845,100 to Rinne et al. (Rinne) in view of U.S. Patent No. 6,466,985 to Goyal et al. (Goyal) and in further view of U.S. Patent No. 6,915,325 to Lee et al. (Lee). The Applicants respectfully disagree.

Rinne is directed to basic QoS mechanisms for wireless transmission of IP traffic. Specifically, Rinne teaches IP packets classified according to QoS are mapped on to radio bearers according to various mechanisms. [Rinne, Abstract] However, as recognized in the Office Action, Rinne does not teach a router alert option header indicating that the hop-by-hop extension header is optional for a router to read. As also recognized in the Office Action, Rinne does not teach a field providing the home address of a mobile node. Further, Rinne does not teach a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node. Instead, Rinne merely teaches that the options in the hop-by-hop extension have a standard format [including] a type value, a length and a value. [Rinne, col. 15, lines 11-18] This is not the same as a value field that indicates the remainder of the hop-by-hop extension header for the gateway support node. Indeed, just because many header types include values, this does not mean that they teach a value field for indicating the remainder of a header is for the gateway support node. Thus, Rinne does not teach a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node.

Furthermore, Rinne does not teach detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node. Instead, Rinne merely teaches a QoS classifier in order to establish priorities with regard to data flows and maintain quality of service. [Rinne, col. 8, lines 49-55] A QoS classification is not the same as a source home address in a hop-by-hop extension header. Indeed, a QoS classification in no way indicates the source home address of a packet such that it is not dropped by a TFT controller that does not recognize the address in the source header. Thus, Rinne does not teach detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node. Accordingly, Rinne does not teach the presently claimed invention.

Goyal is directed to a method and apparatus for providing quality of service using internet protocol. Specifically, Goyal teaches that new label paths are created from the source to a destination via a datagram. However, as recognized in the Office Action, Goyal does not teach a field providing the home address of a mobile node. Further, Goyal does not teach a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node. Moreover, Goyal does not teach detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node. Indeed, Goyal is only cited for the purpose of teaching a router alert option

header indicating that the hop-by-hop extension header is optional for a router to read. However, Goyal also does not teach a router alert option header that indicates that the hop-by-hop extension header is optional for a router to read, but instead only abstractly refers to the possible use of router alerts as path requests. [Goyal, col. 10, lines 20-24] Indeed, all that the general mention of a router alert means is that routers should examine the packet more closely, not specifically that the hop-by-hop extension header is optional for a router to read. Accordingly, Goyal does not teach the presently claimed invention.

Lee teaches a method and program code for communicating with a mobile node through tunnels. Lee teaches that location update message for a mobile node can be made interceptible by routers which form tunnels for communication with the mobile node. [Lee, Abstract] Lee further teaches that to form a tunnel, the correspondent agent binds the mobile node address with the care of address received in the location update message. [Lee, col. 4, lines 11-17, Figure 3] However, Lee does not teach a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node. Further, Lee does not teach detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node. Moreover, Lee does not teach a router alert option header indicating that the hop-by-hop extension header is optional for a router to read. Indeed, Lee is only cited for the purpose of teaching a field providing a home address of a mobile node. However, Lee also fails to teach said field and source home address. Specifically, Lee merely teaches communicating packets via the tunnel to the mobile node based on the destination address, not a source home address.

Within the Office Action, it is asserted that the field providing a home address of a mobile node is taught by "tunnels may be formed that avoid the home agent for more directly communicating with the mobile node," and "the correspondent agent can tunnel the data to the mobile nodes' care of address by changing the IP *destination* address from the mobile node's home address to the care of address at the correspondent agent and restoring the IP destination address to the mobile nodes' home address at the foreign agent." However, again as described above and reflected in the citation of Lee, Lee only teaches communicating packets via tunneling based on their destination address, not their source home address. [Lee, col. 6, line 66 - col. 7, line 16] Indeed, this is not surprising as the whole purpose of tunneling is to focus on the destination. Therefore, Lee simply does not teach a field providing a source home address of a mobile node (so as to allow the TFT to not drop the packet based on an unknown care of address

in the source header when a mobile node moves). Accordingly, Lee does not teach the presently claimed invention.

Additionally, the combination of Lee and Rinne/Goyal is improper as Lee is non-analogous art. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of Applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Furthermore, the MPEP states, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 (CCPA 1959); MPEP §2143.01. Here, Lee is directed to IPv4, contrary to the invention, Rinne and Goyal which all apply to IPv6. This difference is significant specifically in the context of packet ingress and egress as IPv6 does not define foreign agents, while IPv4 does, and therefore Lee utilizes foreign agents that cannot be used in IPv6. Accordingly, Lee is non-analogous art and the combination is improper.

Furthermore, there is no disclosure in Lee of the packet radio network providing a plurality of packet data bearers for communicating the internet packets with nodes attached to the packet radio network. This is because Lee merely discloses an IP tunnel that is a single IP packet data bearer. Lee also teaches that the IP packets are tunneled by the correspondent agent to the mobile node's care of address based on the IP destination address of the mobile node's home address at the foreign agent 40 or the care of address at the correspondent agent.

Lee further teaches that the correspondent agent is arranged to detect only a binding update when a router alert is included. [Lee, col. 3, line 53 - col. 4, line 23] In contrast, the presently claimed invention, as defined in Claim 11, specifies that the IP packets have the router alert header option to identify to the router that the extension header is optional to read, the IP packets being communicated to the correspondent nodes from mobile nodes attached to the external network. The hop-by-hop extension header indicates that the extension header is to be read by the gateway support node, whereas for a router it is optional.

Lee also does not teach controlling the egress or ingress of internet packets to the packet radio network in accordance with the information contained in the hop-by-hop extension header field which is inspected by the gateway support node. Simply directing packets to the tunnel based on the destination address does not represent controlling egress or ingress of internet packets in accordance with the information contained in the hop-by-hop extension header field.

More particularly, according to Claim 11, ingress of internet packets from the external packet data communications network to the packet data bearers of the packet radio network is effected by detecting in the hop-by-hop extension header a source address of the mobile correspondent node. In contrast, Lee teaches communicating packets via the tunnel to the mobile node based on the destination address. Furthermore, there is no further disclosure in Lee of identifying one of the packet data bearers for communicating the internet packets to the correspondent node attached to the packet radio network based on this source address.

Further, Lee addresses a different problem than the claimed invention. Lee aims at reducing the "high volume" of registration traffic from a mobile node to the home agent each time the mobile node moves by making the border router intercept the registration message (binding update) and then acts as the proxy of the mobile node without further forwarding the registration to the home agent as long as the mobile node stays in the same network as the border router.

Therefore, even if their combination is proper, because neither Rinne, Goyal or Lee teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. Accordingly, neither Rinne, Goyal, Lee nor their combination teach the presently claimed invention.

The independent Claim 11 is directed to a gateway support node. The gateway support node of Claim 11 is configured to provide an interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating internet packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the internet packets, the gateway support node being further configured to receive an internet packet comprising a header field, the header field including a source field identifying a source address of the internet packet, a destination field identifying a destination address of the internet packet, and a next header field identifying whether an extension header follows the header field, a type of the extension header, and whether the extension header includes a hop-by-hop extension header, the hop-by-hop extension header comprising a router alert option header indicating that the hop-by-hop extension header is

optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node, wherein the remainder of the hop-by-hop extension header includes a home field providing a home address of a mobile node, to detect that the next header field of the internet packet includes the hop-by-hop extension header, and to detect the router alert option header in the hop-by-hop extension header, and the value field indicating that the remainder of the hop-by-hop extension header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, to recover information from a field provided in the remainder of the hop-by-hop extension header for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information, and to control ingress of internet packets from the external communications network to the packet data bearers of the packet radio network by detecting from the information field provided in the remainder of the hop-by-hop extension header, a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and allowing ingress of the internet packets to the identified packet data bearer,
the gateway support node being operable upon receipt of the internet packet. As described above, the combination of Rinne, Goyal and Lee is improper. As further described above, neither Rinne, Goyal, Lee nor their combination teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. For at least these reasons, the independent Claim 11 is allowable over the teachings of Rinne, Goyal, Lee and their combination.

Claims 12-17, 26 and 27 are dependent on the independent Claim 11. As described above, the independent Claim 11 is allowable over the teachings of Rinne, Goyal, Lee and their combination. Accordingly, Claims 12-17, 26 and 27 are all also allowable as being dependent on an allowable base claim.

The independent Claim 18 is directed to a method of operating a gateway support node to interface between an external packet data communications network and a packet radio network,

the packet radio network providing a plurality of packet data bearers for communicating the internet packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of the nodes communicating the internet packets. The method of Claim 18 comprises receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node, detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header, detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information, wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and allowing ingress of the internet packets to the identified packet data bearer, and otherwise dropping the internet packet. As described above, the combination of Rinne, Goyal and Lee is improper. As further described above, neither Rinne, Goyal, Lee nor their combination teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension

header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. For at least these reasons, the independent Claim 18 is allowable over the teachings of Rinne, Goyal, Lee and their combination.

Claim 19 is dependent on the independent Claim 18. As described above, the independent Claim 18 is allowable over the teachings of Rinne, Goyal, Lee and their combination. Accordingly, Claim 19 is also allowable as being dependent on an allowable base claim.

The independent Claim 24 is directed to a computer readable memory device comprising computer executable instructions forming a computer program to be executed by a data processor within a computer. The program of Claim 24 comprises receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node, detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header, detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information, wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and allowing ingress of the internet packets to the identified packet data bearer, and

otherwise dropping the internet packet. As described above, the combination of Rinne, Goyal and Lee is improper. As further described above, neither Rinne, Goyal, Lee nor their combination teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. For at least these reasons, the independent Claim 24 is allowable over the teachings of Rinne, Goyal, Lee and their combination.

The independent Claim 28 is directed to a computer readable memory device comprising computer executable instructions forming a computer program to be executed by a data processor within a computer. The program of Claim 28 comprises receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node, detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header, detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information, wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for

communicating the internet packets to a correspondent node attached to the packet radio network, and allowing ingress of the internet packets to the identified packet data bearer, and otherwise dropping the internet packet, performing egress packet filtering in accordance with a destination address of internet packets received from the plurality of packet data bearers, egress of internet packets being allowed for internet packets having a legitimate destination address, and upon receipt of the internet packet, detecting from information provided in the remainder of the hop-by-hop extension header field for the gateway support node a destination home address of a mobile correspondent node which is to be the destination of the internet packets, and allowing egress of internet packets if the gateway support node recognises the destination home address as a legitimate home address. As described above, the combination of Rinne, Goyal and Lee is improper. As further described above, neither Rinne, Goyal, Lee nor their combination teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. For at least these reasons, the independent Claim 28 is allowable over the teachings of Rinne, Goyal, Lee and their combination.

The independent Claim 30 is directed to a gateway support node configured to provide an interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating user data packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the user data packets, to receive a user data packet comprising a header field, the header field including a source field identifying a source address of the user data packet, a destination field identifying a destination address of the user data packet and a next header field identifying whether an IPv6 extension header follows the header, a type of the extension header, and whether the extension header includes a hop-by-hop extension header, the hop-by-hop extension header comprising a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node, wherein the remainder of the hop-by-hop extension header includes a home field providing a home address of a mobile node, to detect that the next header field of the user data packet includes the hop-by-hop extension header, and to detect the router alert option

header in the hop-by-hop extension header, and the value field indicating that the remainder of the hop-by-hop extension header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, to recover information from a field provided in the remainder of the hop-by-hop extension header for use in controlling egress and/or ingress of the user data packets to the packet radio network in accordance with the information, and to control ingress of the user data packets from the external communications network to the packet data bearers of the packet radio network by detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a mobile correspondent node communicating the user data packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the user data packets to a correspondent node attached to the packet radio network, and allowing ingress of the user data packets to the identified packet data bearer, the gateway support node being operable upon receipt of the user data packet. As described above, the combination of Rinne, Goyal and Lee is improper. As further described above, neither Rinne, Goyal, Lee nor their combination teach 1) a value field indicating that the remainder of the hop-by-hop header extension header is provided for the gateway support node, 2) detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a correspondent node, 3) a router alert option header indicating that the hop-by-hop extension header is optional for a router to read or 4) a field providing a source home address of a mobile node, neither can their combination. For at least these reasons, the independent Claim 30 is allowable over the teachings of Rinne, Goyal, Lee and their combination.

Applicants respectfully submit that the pending claims are in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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